TITLE: CAP FOR SEALING A BATHTUB OVERFLOW PORT FOR TESTING PURPOSES

BACKGROUND OF THE INVENTION

In new building construction, the plumbers prefer not to put the finished closure valves in the bottom of tubs, or the finished decorative plate over the overflow outlet at the end of the tub until the project is finished because these elements will be often damaged as the construction project is brought to a close. Further, the piping for both of the outlets need to be checked for leaks before the inspection process is completed. The test involves running water down the vent for the drain until it reaches a level above the tub and the tester then determines whether any of the piping leaks. Thus, when the testing operation arrives, a plug is put in the bottom drain of the tub and some sort of a seal plate is placed at the end of the tub on the overflow outlet.

Existing overflow plates have a center opening therein. There are either two or four small screw holes in the plate adjacent the center opening wherein two of the holes are used to hold the plate to the plumbing fixture. In some cases there is a fitting so that the screw hole is located directly in the middle of the access hole. In that case, that hole is in the way when the testing procedure is implemented. In any event, the testing procedure usually involves stuffing a balloon through the large center opening into the pipe in the wall and the pipe is sealed when the balloon is inflated. Further, existing seal plates normally have to be removed when the decorative plate is put on. The

decorative plate is typically held by two screws which either use the screw openings of the plate or two additional openings in the case that four holes are provided.

Some efforts have been made to seal the overflow ports of bathtubs with a diaphragm, and then cut the diaphragm when the test is completed. (See U.S. Patent No. 5,890,241). However, the system for including the diaphragm sometimes involves screws and tools, and is not always convenient to install or to remove after testing.

It is therefore a principal object of this invention to provide a seal for a bathtub overflow port that is very easy to install for testing purposes, and is easily made operable for overflow purposes when the testing is finished.

A further object of the invention is to provide a seal for a bathtub overflow port that is very economical to manufacture.

These and other objects will be apparent to those skilled in the art.

SUMMARY OF THE INVENTION

A temporary closure means for a bathtub overflow port, comprising placing on the outer end of a drain pipe extending through the overflow port a solid cap threaded on the outer end, with or without a sealing element on its inner surface; a cap with an outer face with an aperture thereon covered by a sealing diaphragm, or a solid plug screwed into a threaded interior of the outer end of the drain pipe.

BRIEF DESCRIPTION OF THE DRAWINGS AND PHOTOS

Fig. 1 is a partial perspective view of a conventional bathtub environment utilizing the invention of this application;

Fig. 1A is an enlarged scale sectional view taken on line 1A-1A of Fig. 1;

Fig. 2 is a front perspective view of a first embodiment of the invention;

Fig. 3 is a rear perspective view of a first embodiment of the invention;

Fig. 4 is a sectional view taken on line 4-4 of Fig. 2;

Fig. 5 is an exploded view of a second embodiment of the invention;

Fig. 6 is a sectional view of the assembled components of Fig. 5;

Fig. 7 is an exploded view of that embodiment of the invention;

Fig. 8 is a sectional view of the assembled components of Fig. 7;

Fig. 9 is a perspective view of a fourth embodiment of the invention; and

Fig. 10 is a sectional view of the device of the fourth embodiment in an assembled operating position.

DESCRIPTION OF THE EMBODIMENTS OF THE INVENTION

With reference to Figs. 1 and 1A, a conventional bathroom structure 10 has a floor 12, and a hollow wall 14 with a wall opening 16 therein. A conventional bathtub ("tub") 18 has a base 20 which rests upon floor 12. Sidewalls 22 extend upwardly from base 20 as does

an end wall 24. A bottom 26 dwells in spaced relation to the floor 12.

A conventional drain port 28 is located in bottom 26. A conventional overflow port 30 is located in the end wall 24 (Fig. 2). A vertical drain pipe 32 extends downwardly from drain port 28, and overflow drain pipe 34 extends downwardly from overflow port 30. A horizontal pipe 36 connects pipes 32 and 34. A drain pipe 38 extends downwardly from the junction between pipes 34 and 36.

A conventional vertical vent pipe 40 is located within the hollow wall 14. Pipe 42 interconnects vent pipe 40 and the upper end of overflow drain pipe 34 (Fig. 1A). Conventional water pipes 44 extend through hollow wall 40 and are connected to valve 46 which is interconnected to conventional control member 48 and faucet 50.

With reference to Figs. 2-4, a cap 52 has an outer face 54 which has an inner surface 56 (Fig. 4) and an outer surface 58. The cap 52 has a cylindrical body 60 which has interior threads 62 which are adapted to mate with the threads 31 of port 30 (Fig. 7). The cap also has an annular flange 64 that extends radially outwardly from the open end of the cylindrical body 60. A thin sealing membrane 66 is affixed to the inner surface 56 (Fig. 3) of cap 52 so as to seal the cap when it is screwed on the threads 31 so that the cap can be effectively sealed against the port 30.

With reference to Figs. 5 and 6, a structure is shown very similar to that of Figs. 2-4 except that the cap 52A has a center aperture 68 therein which is covered by a thin sealing membrane 70 in lieu of the sealing membrane 66 revealed in Figs. 2-4.

With reference to Figs. 7 and 8, a cap 72 is shown and is essentially like the cap 52 in Figs. 2-4 except that the seal 66 in cap 52 is not present in the cap 72. Rather, the slightly malleable characteristics of the material of cap 72 (PDC or the like) are sufficient to seal the port 30 when the cap 72 is securely threaded to the port 30 in the same manner that the cap 52 is threaded to the port 30.

With reference to Figs. 9 and 10, the numeral 74 designates a solid plug of plastic or metal material which is comprised of an outer plate 76 which has a hollow stub tube 77 extending outwardly therefrom and having a center bore 78. The stub tube 77 has external threads 80 which are adapted to match internal threads 82 of overflow drain pipe 34. An O-ring seal or the like (not shown) can be used to extend around the exterior of stub tube 77 to seal the outer portion of the plate 76 to the port 30.

In operation, the device in Figs. 2-4 is effected by merely screwing the cap 52 tightly onto the external threads 31 of port 30. When the water test is completed, the cap is removed, and the conventional overflow apparatus of conventional tubs is placed on the port 30.

In the case of the device of Figs. 5 and 6, the cap 52 can either be removed from the port 30, or the thin sealing membrane 66 can be cut away so as to permit the attachment of the conventional overflow mechanisms.

In regard to the device shown in Figs. 7 and 8, the cap 72 is merely removed from the port 30 to be discarded when the test is completed, so that a conventional overflow apparatus can be placed on the threads 31.

In regard to the plug 74 of Figs. 9 and 10, it is tightly inserted within the port 30 by means of the internal threads 82 in member 34A. When the water test is completed, the plug is removed and discarded (or kept for further use) and the conventional overflow mechanism is inserted on the port.

It is therefore seen that the embodiments of this invention achieve at least all of the stated objectives.